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GB-A- 2 185 878
US-A- 4 737 945**

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EP 0 355 011 B1

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1

EP 0 355 011 B1

2

Description**FIELD OF THE INVENTION**

The present invention related to a disc magazine to be used for receiving a plurality of discs of different sizes, for example, compact discs (CD) of two different sizes, to enable receipt therein directly without any adapter for adjusting size.

DESCRIPTION OF THE RELATED ART

Recently, a variety of disc magazines for receiving and containing optical audio discs, for example, those known as compact discs (CDs) have been manufactured with the spread of automatic disc changers for use in automobile. Now, the CDs of two different diameters are on the market. First ones are those of standard type having diameter of 12cm. The others are those of smaller type or single type having diameter of 8cm. Accordingly, two kinds of the disc magazines, or an adapter for adjusting to the small type ones have been necessary to receive the all kinds of the CDs. In other words, there is a demand for a disc magazine which is usable for two sizes of discs without use of the adapter.

OBJECT AND SUMMARY OF THE INVENTION

It is an object of the present invention to provide a disc magazine which can receive a plurality of discs of two different sizes without use of an adapter for size adjusting.

The present invention can provide a disc magazine which has substantially the same size as a conventional disc magazine for 12cm disc, namely, a disc magazine which can detect a different type discs and provide a loading means for various discs in a limited space.

The present invention can provide a disc magazine which can steadily retract the discs of two sizes and can receive them certainly.

The present invention can provide a disc magazine wherein two kind of discs are judged in the disc magazine by its sizes.

The disc magazine in accordance with the present invention is defined in claim 1.

In EP-A-0 225 766 a disc magazine is described comprising a disc cartridge body, shelf-like partition plates defining storage spaces therebetween for inserting discs from a front opening, biasing means provided inside the disc cartridge body for biasing a disc to be stored in the storage direction, and slide members having a push portion for pushing the stored disc in a discharging direction and being slidable along disc charge and storage direction for discharging or charging the disc against a biasing force of said biasing means upon operation of a projecting portion.

The slide members are temporarily locked at or unlocked from the disc storage portion.

EP-A-0 261 384 describes an apparatus for reading out signals from a selected one of a plurality of two kinds of discs with different diameter. One of the described apparatuses comprises: tray means having a first disc mounting portion and a second disc mounting portion for receiving and holding the two different kinds of discs, tray driving means for moving the tray means back and forth in a horizontal direction between a first position in which the tray means is stored in the apparatus and a second position in which the tray means is out of the apparatus. In this way the two different kinds of discs are moved into the interior of the casing for reading out signals, wherein the positions of the two different kinds of discs are concentric to each other.

While the novel features of the invention are set forth particularly in the appended claims, the invention, both as to organization and content, will be better understood and appreciated, along with other objects and features thereof, from the following detailed description taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 is a perspective view of a disc magazine embodying the present invention.

FIG.2 is a horizontal inside view the disc magazine of FIG.1.

FIG.3 is a plan view of a disc carrier of FIG.2.

FIG.4 is an elevation view partly in section of a disc magazine of the present invention.

FIG.5 is a plan view of a partition plate portion of FIG.2.

FIG.5(a) is a plan view of a partition plate of FIG.5.

FIG.5(b) is a plan view of a linear sheet of FIG.5.

FIG.5(c) is a plan view of a thin film 44 of FIG.5.

FIG.6 is a cross-sectional view taken on line VI-VI of FIG.5.

FIG.7 is a cross-sectional view taken on line VII-VII of FIG.5.

FIG.8 shows an inside of a slot wherein a standard disc is received.

FIG.9 shows an inside of a slot wherein a small type disc is received.

FIG.10 is an elevational view of a disc carrier or FIG.3.

FIG.11 is a partly enlarged view of a disc carrier of FIG.3.

FIG.12 is a cross-sectional view taken on line XVII - XVII of FIG.11.

FIG.13 is a sectional view of a modified form of a disc pad of FIG.12.

FIG.14 is an elevational view of partition plates of the present invention.

FIG.15 is an elevational view of a modified form

3

EP 0 355 011 B1

4

of a partition plates of FIG.14.

FIG.16 is a sectional view of a connecting portion of a disc carrier of FIG.2.

FIG.17 is a cross-sectional view taken on line XVII - XVII of FIG.2.

FIG.18 is a side elevation view of an arm spring of FIG.2.

FIG.19 is a side elevation view of a kick lever spring of FIG.2.

It will be recognized that some or all of the Figures are schematic representations for purposes of illustration and do not necessarily depict the actual relative sizes or locations of the elements shown.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Hereafter, a preferred embodiment of the present invention is described with reference to the accompanying drawings.

FIG.1 is a perspective view of a disc magazine of a preferred embodiment in accordance with the present invention. In FIG.1, a front opening 2 for inserting or projecting a disc, such as compact disc (CD), is provided on the front of a magazine case 1. Plural partition plates 3 are mounted levelly at regular intervals along vertical direction in the opening 2 thereby defining the disc-containing spaces. The front opening 2 of the magazine case 1 are divided into plural slots 90 by the plural partition plates 3. Plural CD 4, 34 are loaded in the plural slots 90 respectively, and received in the magazine case 1.

FIG.2 is a horizontal inside view of FIG.1, and shows interior construction of the magazine case 1. In FIG.2, the above-mentioned partition plate 3 is shown at the under side as the front of the magazine case 1. A disc carrier 10 having a fan shape as shown in FIG.3 is provided in a slot 90 at the rear side of the partition plate 3. Both of the upside faces of the disc carrier 10 and the partition plate 3 are arranged on an even horizontal face. The disc carrier 10 is held by grooved guides 5 which are provided in frames 51, 51 integrated with the magazine case 1. And the disc carrier 10 is constructed to slide in the forward and backward of the magazine case 1 along the grooved guides 5. In FIG.2, a connecting portion 19 of the disc carrier 10 and a kick lever 7 behind the disc carrier 10 are connected by a connecting pin 20. Therefore, when the kick lever 7 is turned by a finger or a suitable linkage around a kick-lever shaft 8 anti-clockwise, the disc carrier 10 is slid forward, i.e. toward the front side. And, since the kick lever 7 is always pressed clockwise by kick-lever spring 9, the kick lever 7 is restored to the position shown in FIG.2 when the finger or the suitable linkage is removed. A diameter of the outer arc 10a of the disc carrier 10 has substantially the same diameter as the standard disc 4 having a diameter of 12cm. A diameter of the inner arc 11 of the

disc carrier 10 has substantially the same diameter as the small type CD 34 having a diameter of 8cm. FIG.3 is a plan view of the disc carrier 10 of FIG.1. As shown in FIG.3, two elastic stoppers 13, 13 are provided on the inner arc 11 at the parts near both ends of the inner arc 11 of the disc carrier 10. The elastic stoppers 13, 13 are connected to the disc carrier 10 by a thin hinge 16 which are at the parts near the inner arc 11. Each elastic stopper 13 is mounted to lean upside at its free end which is near the center of the inner arc 11. And, each elastic stopper 13 has an inclined guide-face 15 at a portion of the front side thereof. The inclined guide-face 15 is formed to lean forward-falling-down. Thus, when the standard disc 4 is inserted, the edge of the standard disc 4 touches over the inclined guide-face 15 of the elastic stopper 13 to be depressed thereby to guide the standard disc forward over the disc carrier 10.

FIG.4 is an elevation view partly in section of a disc magazine which receives a standard disc 4 and a small type CD 34. FIG. 4 shows that elastic stoppers 13, 13, at the slot 90 which receives the standard disc 4, are depressed by the standard disc 4.

As shown in FIG.2 and FIG.3, a disc supporter 12, which is thinner than the disc carrier 10, is provided extending from the bottom face of the disc carrier 10. Thus, the disc supporter 12 and the disc carrier 10 are slid at the same time by driving of the kick lever 7. The disc supporter 12 is tongue-shaped as shown in FIG.2 and a small type CD 34 which is loaded in a slot 90 is supported by the disc supporter 12. Therefore, when the disc carrier 10 is driven forward by the kick lever 7, the small type CD 34 is slid in a direction to the front side.

FIG.5 is a plan view of the partition plate portion of FIG.2. FIG.6 is a cross-sectional view taken on line VI - VI of FIG.5. FIG.7 is a cross-sectional view taken on line VII - VII of FIG.5. Non-woven fabric or woven cloth are put by adhesive or by melting on the both sides the partition plate 3 as liner sheets 29 as shown in FIG.6. Also, a thin film 44 such as thin plastic film is bonded on the upper face of the lower liner sheet 29. FIG.5(a) is a plan view of a partition plate 3. FIG.5(b) is a plan view of a liner sheet 29. FIG.5(c) is a plan view of a thin film 44. Front end tip of the above-mentioned disc supporter 12 is arranged between the upper liner sheet 29 and the thin film film 44 as shown in FIG.2. Two projections 26, 26 of the partition plate 3 are provided to enforce the arc shaped upper and lower liner sheet 29, 29. The disc supporter 12 is inserted between the projections 26, 26 when the disc supporter 12 is slid forward integrally with the disc carrier 10.

As shown in FIG.5 and FIG.5(a), plural ribs 27 are provided symmetrically on the both sides of the partition plate 3. Each rib 27 is shaped to have such taper that outside is high and inside (center side) is low as shown in FIG.7. As a results, a standard disc 4, or a

5

EP 0 355 011 B1

6

small type CD 34 loaded in a slot 90 is supported point-contacts of its periphery with ridges of the ribs 27. Therefore, the face thereof is protected from damaging. The both, left and right, sides of the partition plate 3 have large notches 6, 6 of triangular shape. In each notch 6, a holder arm 21 is mounted rotatably around an arm pin 22 mounted on the magazine case 1. Each holder arm 21 is pressed by an arm spring 23 toward center of the magazine case 1. Therefore, the holder arms 21 contacts to stoppers 25 by arm springs 23, 23 which is provided between the partition plate 3 as shown in FIG.2 when a disc is not loaded.

In the disc magazine of this embodiment, the above-mentioned disc carrier 10 having the elastic stoppers 13, 13, a kick lever 7, a pair of holder arms 21, 21 are provided in each of above-mentioned slot 90.

The operation of the above-mentioned disc magazine in accordance with the present invention is elucidated hereafter with reference to the drawings of FIG.2, FIG.8 and FIG.9. FIG.8 shows an inside of a slot 90 wherein a standard CD 4 is loaded. And, FIG.9 shows an inside of a slot 90 when a small type CD 34 is loaded.

The following is explanation of retraction of a standard CD 4. In the state of the disc magazine as shown in FIG. 2, when the standard CD 4 which has a diameter of 12cm is inserted in a selected slot 90, the peripheral edge of the standard CD 4 pushes both of the holder arms 21, 21 overcoming the force of the arm spring 23. And, the holder arms 21, 21 are pushed maximum at the time when the center part, which is between the front end and the innermost end, of the standard CD 4 passes by the end tips of the holder arms 21, 21. And when the standard CD 4 is further inserted into the slot 90, the standard CD 4 is pressed inside so as to be inserted inward by the force of arm spring 23. Therefore, the standard CD 4 is automatically taken in the slot 90 after the center part or the maximum width part of the standard CD 4 passes the contact points of the standard CD 4 with the end tips of the holder arms 21, 21. At this time, as the standard CD 4 has a diameter of 12cm, the edge of the standard CD 4 contacts the inclined guide-faces 15, 15 of the elastic stoppers 13, 13. And, the elastic stoppers 13, 13 are depressed down by the edge of the standard CD 4. Thus, the standard CD 4 is inserted smoothly inside to the innermost end, so that the edge of the standard CD 4 does not contact the inner arc face 11 of the disc carrier 10, but is brought over the disc carrier 10 by sliding on the inclined guide-face 15. And finally, the standard CD 4 is completely received on the disc carrier 10 as shown by a solid line in FIG.8.

The following is an explanation of ejection of a standard CD 4 received in a slot 90. The kick lever 7 corresponding to the slot 90 where a desired standard CD 4 is stored, is pressed anti-clockwise in the direc-

tion of arrow A of FIG.8. Then, by turning the kick lever 7 by finger or by some mechanical linkage around a kick-lever shaft 8, the disc carrier 10 is slid forward in the direction of arrow B of FIG.8. And the standard CD 4 is ejected to a position as shown by two-dot chain line in FIG.8. In this space, the standard CD 4 can be caught and transferred to another device, such as a CD player, or replaced by another disc. The disc carrier 10 and the kick lever 7 returns to the first position by the kick-lever spring 9 when the driving force to the kick lever 7 is removed.

The following is an explanation of retraction of a small type CD 34 having a diameter of 8cm with reference to the drawing of FIG.9. FIG.9 shows an inside of a slot 90 wherein the small type CD 34 is received. When the small type CD 34 is inserted in a vacant slot 90, the small type CD 34 is positioned to the center part on left-right position by being pushed by both holder arms 21, 21. And, the small type CD 34 is automatically taken in the slot 90 after the maximum width part (namely the center part) of the small type CD 34 passes contact points of the small type CD 34 with the end tips of the holder arms 21, 21, in the same way as in the aforementioned standard CD 4. At this time, as the small type CD 34 has a diameter of 8cm, the periphery or edge of the small type CD 34 does not contact the inclined guide-faces 15, 15 of the elastic stoppers 13, 13. Thus, the edge of the small type CD 34 does not advance over the disc carrier 10, but touches the inner arc face 11 of the disc carrier 10. And, the small type CD 34 is received on the disc supporter 12 and below appendixes 14, 14 of the elastic stoppers 13, 13 as shown by a solid line in FIG.9. Therefore, the small type CD 34 is held at a predetermined position in horizontal direction by both of the holder arms 21, 21 and the inner arc face 11 of the disc carrier 10. And in the vertical direction, the small type CD 34 is held by the disc supporter 12, the partition plate 3 and the two appendixes 14, 14 of the elastic stoppers 13, 13. And which type of CD being stored in which slot 90 can be easily confirmed from the observation of the opening 2 of the magazine case 1. This is because, that the front edges of the small type CD 34 stored are arranged near the opening 2, similarly to the front edges of the standard CD 4 being arranged near the opening 2. Therefore, there is no fear of the trouble that two CD are inserted in one slot 90.

In case of ejection of a small type CD 34 received in a slot 90, the kick lever 7 is pressed anti-clockwise in the direction of arrow A, in the same way as aforementioned ejection of the standard CD 4. Then, by turning the kick lever 7 around the kick-lever shaft 8, the disc carrier 10 is slid forward the direction of arrow B of FIG.9. And the small type CD 34 is pushed out by the inner arc face 11 of the disc carrier 10. At the same time, both of the holder arms 21, 21 guide the small type CD 34 at center position on the opening of

7

EP 0 355 011 B1

8

the slot 90 substantially. Finally, the small type CD 34 is ejected as shown by two-dot chain line in FIG.9, namely at the same position as the standard CD 4 is ejected. In the operation of the kick lever 7, the connecting pin 20, which connects the left end of the kick lever 7 to the connecting portion 19, is rotated around the kick-lever shaft 8. Thus, the disc carrier 10 is slid out rotating a little. However, two positions of the connecting pin 20 on the kick lever 7 when the disc carrier 10 is at storing position and when the disc carrier 10 is at ejected position are on a line which is parallel to direction of insertion-ejection of disc. Thus, in same slot 90, an ejected position of a standard CD 4 and an ejected position of a small type CD 34 are on the same center line.

The following is a detailed description of the major components which constitute the disc magazine in accordance with the present invention.

FIG.10 is an elevational view of the disc carrier 10 shown in FIG.3. FIG.11 is a partly enlarged view of a disc carrier 10 of FIG.3. FIG.12 is a cross-sectional view taken on line VII-VII of FIG.11. FIG.13 is a sectional view of a modified form of a disc pad 33 as shown in FIG.12. Both side edges of the disc carrier 10 have thin plates 17 along the outer arc of the disc carrier 10 as shown in FIG.2 and FIG.10. The thin plates 17 have two vertical members 18, 18 for engaging with the grooved guide 5 of the magazine case 1. As shown in FIG.11, the elastic stopper 13 including the appendix 14 has an inside arc which has larger radius than the radius of a small type CD 34 (8cm) as shown by arrow R₁ of FIG.11. And that, the inside arc shape of the elastic stopper 13 has smaller radius than a radius of a standard CD 4 (12cm). As a result, periphery of a small type CD 34 is steadily received by and under an appendix 14 of the elastic stopper 13 and by the inner arc face 11 of the disc carrier 10, but does not contact the inclined guide-face 15. On the other hand, periphery of a standard CD 4 certainly contacts both of the inclined guide-face 15, 15 thereby to be loaded on the disc carrier 10 smoothly. Further the elastic stopper 13 including the appendix 14 has an outside arc shape whose radius is larger than a radius of a small type CD 34 as shown by arrow R₂ of FIG.11. As a result, even if a known doughnut-shaped adapter for use for small type CD 34 is erroneously inserted in a slot 90 by a mistake, the adapter can be taken out smoothly similarly to taking out of the standard CD 4. The elastic stopper 13 have a disc pad 33 on the end tip of the upper face thereof. By the disc pad 33, a disc face of a standard CD 4 loaded on the disc carrier 10 is prevented from damaging and dusting. The disc pad 33 is made of non-woven fabric or felt. FIG.12 shows a sectional view of the disc pad 33 comprising non-woven fabric. FIG.13 shows a sectional view of another embodiment of the disc pad 33 comprising felt. Direction of arrow C in FIG.12 and FIG.13 shows insert directions of a standard CD 4. As

shown in FIG.12, the disc pad 33 is mounted in a recess on the upper face of the elastic stopper 13. The recess is formed convex shape, namely spherical face. In FIG.13, the disc pad 33 is mounted in a recess on the upper face of the elastic stopper 13. A recess is formed having inclined bottom.

In FIG.5 and FIG.6, the liner sheet 29 and the thin film 44 are bonded on the partition plate 3 similarly to the aforementioned description. Rear ends (innermost ends) of the liner sheet 29 extend in the direction of back side where the disc carrier 10 adjoins thereto. And the extending portions of the liner sheet 29 is formed substantially in semicircular shape. The radius of curvature of an arc of the semicircular extending portion is larger than a radius of the small type CD 34. Thus, if an adapter for use in inserting a small type CD 34 to the conventional disc magazine for a standard CD 4 is inserted to the disc magazine of this embodiment by error, the adapter can be picked out smoothly because the inside circle of the adapter is not caught by the extended arc portion of the liner sheet 29.

The thin film 44 bonded on the lower liner sheet 29 is arranged under the disc carrier 10 and the disc supporter 12 and the inclined guide-face 15 of the elastic stopper 13 as shown in FIG.2. As a result, when the standard CD 4 is inserted into the desired slot 90, the standard CD 4 does not contact the inclined guide-face 15 in the next upper slot 90, even if the edge of the standard CD 4 is slant upward.

FIG.14 shows an elevational view of showing manner of piling up of the partition plates 3, 3 of the embodiment, shown in FIG.5. Each one spacer 28 is provided on respective four corners (see FIG.5) of the partition plate 3. The top and bottom faces of the spacers 28 have steps of corresponding shape, so that the top and bottom faces engage each other and is fixed when piled up. FIG.15 shows an elevational view of a modified embodiment of the partition plates 3, 3 of FIG.14. By providing the spacers 28, the partition plates 3 can be piled up firmly and certainly with accurate mutual positional relation. Therefore, the height of each slot 90 is given by the height of the spacers 28 only, and not influenced by the non-woven fabric and manner of its bonding. And, since the spacers 28 are firmly fixed each other, the partition plate 3 is prevented from deformation, and each slot 90 has accurate height.

FIG.16 is a sectional view of the connecting portion of the disc carriers 10 and kick levers 7. The connecting portion 19 of the disc carriers 10 are rotatably connected to the kick levers 7 by connecting pins 20, respectively. And, the kick levers 7 is pivoted by a common kick-lever shaft 8. Since the intervals between the piled-up partition plates 3 are selected equal to the intervals between the kick lever 7, and that the connecting portion 19 and the end of the kick levers 7 are connected by the pin 20, the partition

5

9

EP 0 355 011 B1

10

plate 3 is held always horizontal with accurate intervals. FIG.17 is a cross-sectional view taken on line XVII-XVII of FIG.2. The holder arms 21, which are piled up, are provided rotatably around the arm pin 22 as shown in FIG.17. FIG.17 shows that holder arms 21, 21 ... contact stoppers 25, 25 ..., respectively. Since the stopper 25, which is provided in the notch 6 of the partition plate 3, is arranged at a close position to the arm pin 22, the height of the stopper 25 can be selected relatively high, namely slightly lower than the height of the rib 27. On account of the relatively high stopper 25, the holder arm 21 and the stopper 25 certainly contact each other. Since the stopper 25 is arranged close to the arm pin 22, the contact position on the holder arm 21 with the stopper 25 does not fluctuate much even if the partition plate 3 is somewhat deformed e.g. by heat. The stopper 25 may or may not be formed integrally with the partition plate 3.

FIG.18 is an elevation view of the arm spring 23 of this embodiment. As shown in FIG.2, the arm spring 23 comprises plural fingers each consisting of a first finger 23a which is connected via a turning section 24 and second fingers 23b which is extending from the first finger 23a. As shown in FIG.2, there is a bending portion 23c between the first finger 23a and the second finger 23b. When the small type CD 34 is inserted to a slot 90, the end of the second finger 23b moves sliding on the side face of the holder arm 21. On the other hand, when the standard CD 4 is inserted to a slot 90, the bending portion 23c which is between the first finger 23a and the second finger 23b touches the holder arm 21. And, when the center part of the standard CD 4 passes, a free end of the second finger 23b of the arm spring 23 contacts with a spring stopper 23d adjacent to the arm pin 22. Therefore, the fulcrum point, whereat the force of the arm spring 23 pushes the holder arm 21 moves to more apart point from the arm pin 22. Hence, the holder arm 21 strongly presses the disc when the center portion of the standard CD 4 passes between both of the holder arms 21, 21. Furthermore, the arm spring 23 has the turning section 24 formed substantially in loop shape. The turning portion 24 has a minimum bend radius that is a necessary minimum condition for making a spring. Therefore, the turning section 24 retains an elastic force even when the holder arm 21 is rotated at the maximum angle, namely, when the center portion of the standard CD 4 passes end tips of the holder arm 21.

The holder arms 21, 21 may be formed in different shape from the above embodiment, in order to give a good feeling at the inserting or projecting a CD. For example, a side face of a holder arm 21 has a hollow for contacting a CD more certainty and/or the holder arm 21 is made of elastic material, and/or an arm spring 23 has an arcuate fingers for contacting a holder arm 21 gently.

FIG.19 is an elevation view of the kick-lever spring 9 of this embodiment. The kick-lever spring 9 comprises plural fingers 9a which contact the kick levers 7 respectively. In case of this embodiment, one finger 9a of the kick-lever spring 9 has a considerable height (width of the finger 9a) so as to press two adjoining kick levers 7, 7. Therefore, the fingers 9a has an enough elastic force in spite of small size and thin material. And, the kick-lever spring 9 can operate certainly the disc carrier 10 to be returned.

In the state that several standard CD 4 and several small type CD 34 are mixedly received in the disc magazine in accordance with the present invention, by turning and returning all of the kick levers 7, the small type CD 34 only are ejected and kept in that state. On the other hand, at that time, the standards CD 4 are once ejected but then returned on the returning disc carrier 10. This is because, both the left and right holder arms 21, 21 in a slot 90 catch the periphery of the disc at the center portion of the small type CD 34, namely at the ejected position. Therefore, the only small type CD 34 can be selectively taken out from the disc magazine in accordance with the present invention.

Claims

1. A disc magazine comprising:
 - a magazine case (1),
 - a plurality of partition plates (3) which are held horizontally in the magazine case (1) for defining therebetween a plurality of slots (90) for containing a plurality of discs to be inserted from a front opening (2) of said magazine case (1),
 - a plurality of disc engaging means (10) which are held horizontally and slidably at the rear side of said plurality of partition plates (3) in said magazine case (1),
 - characterized in that
 - said plurality of disc engaging means are a plurality of disc carrier means (10) which are held on and at the rear side of said plurality of partition plates (3) in said magazine case (1),
 - a plurality of disc supporter means (12) are provided on said plurality of disc carrier means (10) for supporting smaller size discs (34) on said disc carrier means (10), respectively, and said plurality of disc supporter means (12) comprise at least one contact means (13) for stopping said small size disc (34) to be inserted with upper stopper portions (14) for covering and preventing said small size disc (34) from upward moving and a lower stopper portion (11) for receiving and preventing said small size disc (34) from downward moving.
2. A disc magazine in accordance with claim 1, char-

11

EP 0 355 011 B1

12

acterized in that said plurality of disc supporter means (12) are provided on said disc carrier means (10) at the side of said front opening (2).

3. A disc magazine in accordance with claim 1, characterized in that each of said disc carrier means (10) has a thin plate (17) along a periphery (10a) thereof and a grooved guide (5) for engaging said thin plate (17).
4. A disc magazine in accordance with one of the claims 1 to 3, characterized in that each of said disc carrier means (10) is connected by a connecting pin (20) to an end of a kick lever (7) for sliding said disc carrier means (10), positions of said connecting pin (20) on said kick lever (7) when the disc carrier means (10) is at storing position and when the disc carrier means (10) is at ejected position, are on a line which is parallel to the direction of the insertion-ejection of the discs.
5. A disc magazine in accordance with one of the claims 1 to 4, characterized by a groove guide (5) for supporting both sides of each of said disc carrier means (10) and a kick lever (7) which supports substantially the innermost side of said disc carrier means (10).
6. A disc magazine in accordance with one of the claims 1 to 5, characterized by a pressing means for pressing each of said disc carrier means (10) to the inner direction.
7. A disc magazine in accordance with one of the claims 1 to 6, characterized in that holder arms (21) are provided each of which is pivoted by an arm pin (22) provided near both sides of said opening (2), and that the free-end of each hold arm (21) is arranged at a more inner position than the corresponding arm pin (22), pressing means are arranged to press outer sides of said hold arm (21), and an edge of a disc in a slot (90) is pressed by said free-end of said holder arms (21).
8. A disc magazine in accordance with one of the claims 1 to 7, characterized in that each of said partition plates (3) comprises a plate shaped member and spacers (28) provided on both ends thereof, said spacer (28) having engage steps formed, and thereby allowing a piling of said partition plate (3) to form slots (90) therebetween.
9. A disc magazine in accordance with one of the claims 2 to 8, characterized in that each of said plural disc supporter means (12) comprises an

elastic stopper (13) provided on said disc carrier means (10) slantly upward to stop said small size disc (34) to be inserted.

10. A disc magazine in accordance with one of the claims 1 to 9, characterized in that each of said plural disc carrier means (10) has a stopping portion formed in arc-shape, and said lower stopper portion (11) extends stepwise from the bottom of said stopping portion.
11. A disc magazine in accordance with one of the claims 1 to 10, characterized in that said lower stopper portion provided on said disc carrier means (10) is inserted between two projections (26) provided on each of said partition plates (3).
12. A disc magazine in accordance with one of the claims 1 to 11, characterized in that a front edge of a standard disc (4) projected from a slot (90) and a front edge of a small size disc (34) projected from a slot (90) are arranged at substantially the same position when said kick levers (7) are turned by ejecting operation.
13. A disc magazine in accordance with one of the claims 1 to 12, characterized in that a front edge of a standard disc (4) when received in a slot (90) and a front edge of a small size disc (34) when received in the slot (90) are arranged at substantially the same position from said opening (2).
14. A disc magazine in accordance with one of the claims 5 to 13, characterized in that only discs of desired size are held at ejected position and discs of other size are returned when said kick levers (7) are released.
15. A disc magazine in accordance with one of the claims 7 to 14, characterized in that said holder arms (21) are provided rotatably by said arm pins (22) and are urged to one direction, said partition plates (3) stop said free-ends of said holder arms (21), respectively.
16. A disc magazine in accordance with one of the claims 7 to 15, characterized in that an arm spring (23) is provided having a bending portion projecting toward a side face of a respective holder arm (21), said bending portion pressing said holder arm (21) when said holder arm (21) is rotated in fixed angle overcoming the force of said arm spring (23).
17. A disc magazine in accordance with one of the claims 7 to 16, characterized in that said arm spring (23) is transformed by rotating said holder

13

EP 0 355 011 B1

14

- arm (21) after a free end of said arm spring (23) contacts a spring stopper (25) of said magazine case (1).
18. A disc magazine in accordance with one of the claims 10 to 17, characterized in that an upper stopper portion is provided on an upper side of said elastic stopper (13). 5
19. A disc magazine in accordance with one of the claims 10 to 18, characterized in that each of said disc carrier means (10) comprises a disc pad (33) provided on an upper face of free-end of said elastic stopper (13). 10
20. A disc magazine in accordance with one of the claims 3 to 19, characterized in that a pair of elastic stoppers (13) has said contact portion arranged substantially on a part on an extension of arc of said stopping portion of said disc carrier means (10), and provided elastically on said disc carrier means (10), and projected to be slanted in upper direction. 15 20
21. A disc magazine in accordance with one of the claims 11 to 20, characterized in that an extended portion which is extended toward the rear side of said magazine case (1), is provided on each of said partition plates (3), and said extended portion is arranged to override at least a front end of the upper and/or under face of said lower stopper portion. 25 30
22. A disc magazine in accordance with one of the claims 15 to 21, characterized in that a distance between free-ends of both of said holder arms (21) at their resting positions is smaller than the diameter of said small type disc (34). 35
23. A disc magazine in accordance with one of the claims 15 to 22, characterized in that a stopper (25) for stopping said holder arm (21) is provided on an edge portion of each of said partition plates (3) as a widened part, at a position close to opening cut off like a triangular portion. 40 45
24. A disc magazine in accordance with claim 20, characterized in that said disc pad (33) is mounted as convex part or slant plane in a recess part on said upper face. 50
25. A disc magazine in accordance with claim 21, characterized in that said elastic stopper (13) has a hinge portion provided on its outer side and an inclined guide-face provided on the front side of said elastic stopper (13). 55
26. A disc magazine in accordance with one of the claims 11 to 25, characterized in that each of said disc carrier means (10) has a support guide means of thin plate (17) for supporting and guiding outer edge of said disc carrier means (10) and said inclined guide-face portions (15) of said elastic stopper (13) on said disc carrier means (10), in a manner to be vertically shiftable at pushing by rear side of said disc when inserted.
27. A disc magazine in accordance with one of the claims 20 to 26, characterized in that an outer shape of said elastic stopper (13) has an arc line which has a larger radius (R_2) than a radius (R_1) of said small size disc (34).
28. A disc magazine in accordance with one of the claims 20 to 27, characterized in that a radius of a front edge of said elastic stopper (13) including an appendix (14) has a smaller radius than a radius of said standard disc (4).
29. A disc magazine in accordance with one of the claims 20 to 28, characterized in that a radius of a front edge of said elastic stopper (13) including an appendix (14) has a larger radius than a radius (R_1) of said small size disc (34).
30. A disc magazine in accordance with one of the claims 20 to 29, characterized in that the center of arc of said front edge of said elastic stopper (13) is on a center line defined by connecting centers of said standard disc (4) and said small type disc (34).
31. A disc magazine in accordance with one of the claims 21 to 30, characterized in that an arc shape of said extended portion has a radius which is larger than a radius (21) of said small size disc (34).
32. A disc magazine in accordance with one of the claims 26 to 31, characterized in that an extended portion covers the under side of said lower stopper portion and an inclined guide-face section.
33. A disc magazine in accordance with one of the claims 21 to 32, characterized in that said extended portion consists of cloth fixed on a pair of projections (26), whereto a thin film (44) such as resin film is fixed under said extended portion.
34. A disc magazine in accordance with claim 33, characterized in that said thin film (44) is a resin film and is arranged under and across said two projections (26) and is further extending outside of the two projections 26.
35. A disc magazine in accordance with claim 32,

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EP 0 355 011 B1

16

characterized in that said extended arc portion has upper and lower arc-shaped sheets which are extended from the upper face and the rear face of said partition plate (3), respectively, wherein a lower stopper portion is inserted between said upper and lower arc-shaped sheets.

36. A disc magazine in accordance with claim 32, characterized in that the width of said extended portion is larger than a diameter of said small size disc (34).

Patentansprüche

1. Ein Plattenmagazin, das aufweist:
ein Magazingehäuse (1),
eine Vielzahl von Unterteilungsplatten (3), die horizontal in dem Magazingehäuse (1) gehalten werden, um zwischen sich eine Vielzahl von Schlitten (90) zum Aufnehmen einer Vielzahl von Platten zu definieren, die von einer Vorderöffnung (2) des Magazingehäuses (1) einzufügen sind,
eine Vielzahl von Platten aufnehmenden Einrichtungen (10), die horizontal und gleitfähig an der Rückseite der Vielzahl von Unterteilungsplatten (3) in dem Magazingehäuse (1) gehalten werden, dadurch gekennzeichnet, daß die Vielzahl von Platten ergreifenden Einrichtungen eine Vielzahl von Plattenträgereinrichtungen (10) ist, die auf und an der Rückseite der Vielzahl von Unterteilungsplatten (3) in dem Magazingehäuse (1) gehalten werden,
eine Vielzahl von Plattenhalteeinrichtungen (12) auf der Vielzahl von Plattenträgereinrichtungen (10) vorgesehen ist, um jeweils Platten (34) kleinerer Größe auf der Plattenträgereinrichtung (10) zu halten bzw. aufzunehmen, und die Vielzahl von Plattenhalteeinrichtungen (12) wenigstens eine Kontakteinrichtung (13) zum Stoppen der Platte (34) kleinerer Größe, die einzugeben ist, mit oberen Stopperteilen (14) zum Abdecken der Platte (34) kleiner Größe und zum Verhindern, daß die Platte (34) kleiner Größe sich nach oben bewegt, und mit einem unteren Stopperteil (11) zum Aufnehmen der Platte (34) kleiner Größe und Verhindern, daß die Platte (34) kleiner Größe sich nach unten bewegt, aufweist.
2. Ein Plattenmagazin nach Anspruch 1, dadurch gekennzeichnet, daß die Vielzahl von Plattenhalteeinrichtungen (12) auf der Plattenträgereinrichtung (10) an der Seite der Vorderöffnung (2) vorgesehen ist.
3. Ein Plattenmagazin nach Anspruch 1, dadurch gekennzeichnet, daß jede der Plattenträgerein-

richtungen (10) eine dünne Platte (17) entlang eines Umfangs (10a) und eine Nutführung (5) zum Eingreifen mit der dünnen Platte (17) hat.

4. Ein Plattenmagazin nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß jede der Plattenträgereinrichtungen (10) durch einen Verbindungsstift (20) mit einem Ende eines Kick- bzw. Stoßhebels (7) zum Gleitenlassen der Plattenträgereinrichtung (10) verbunden ist, die Positionen des Verbindungsstiftes (20) an dem Kickhebel (7), wenn die Plattenträgereinrichtung (10) bei einer Speicherposition und wenn die Plattenträgereinrichtung (10) bei einer hinausgestoßenen Position ist, auf einer Linie liegen, die parallel mit der Richtung des Einfügens - Auswerfens der Platten liegt.
5. Ein Plattenmagazin nach einem der Ansprüche 1 bis 4, gekennzeichnet durch eine Nutführung (5) zum Halten bzw. Aufnehmen beider Seiten jeder der Plattenträgereinrichtungen (10) und einen Kick- bzw. Stoßhebel (7), der im wesentlichen die innerste Seite der Plattenträgereinrichtung (10) trägt.
6. Ein Plattenmagazin nach einem der Ansprüche 1 bis 5, gekennzeichnet durch eine Drückeinrichtung zum Drücken jeder der Plattenträgereinrichtungen (10) zu der Innenrichtung.
7. Ein Plattenmagazin nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß Haltearme vorgesehen sind, wobei jeder von ihnen durch einen Armstift (22) dreh- bzw. schwenkbar gehalten ist, der nahe beiden Seiten der Öffnung (2) vorgesehen ist, und daß das freie Ende jedes Haltearms (21) an einer weiter innen liegenden Position als der entsprechende Armstift (22) angeordnet ist, Drückeinrichtungen angeordnet sind, um Außenseiten des Haltearms (21) zu drücken, und eine Kante einer Platte in einem Schlitz (90) durch das freie Ende der Haltearme (21) gedrückt wird.
8. Ein Plattenmagazin nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, daß jede der Unterteilungsplatten (3) ein plattenförmiges Glied und Abstandshalter (28), die an beiden Enden davon vorgesehen sind, aufweist, wobei die Abstandshalter (28) Eingriffsstufen aufweisen, und dadurch ein Stapeln der Unterteilungsplatten (3) ermöglicht wird, um Schlitz (90) dazwischen auszubilden.
9. Ein Plattenmagazin nach einem der Ansprüche 2 bis 8, dadurch gekennzeichnet, daß jede der Vielzahl von Plattenhalteeinrichtungen (12) einen

17

EP 0 355 011 B1

18

elastischen Stopper (13) aufweist, der auf der Plattenträgereinrichtung (10) schräg nach oben bzw. geneigt nach oben hin vorgesehen ist, um die Platte (34) mit kleiner Größe, die eingefügt werden soll, zu stoppen.

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aufweist, der zu einer Seitenfläche eines jeweiligen Haltearmes (21) hin vorsteht, wobei der gebogene Teil den Haltearm (21) drückt, wenn der Haltearm (21) in einem festen Winkel gedreht ist und die Kraft der Armfeder (23) überwindet.

10. Ein Plattenmagazin nach einem der Ansprüche 1 bis 9, dadurch gekennzeichnet, daß jede der Vielzahl von Plattenträgereinrichtungen (10) einen stoppenden Teil aufweist, der in einer Bogenform ausgebildet ist, und der untere Stopperteil (11) sich schrittweise von dem Boden des stoppenden Teils erstreckt.

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17. Ein Plattenmagazin nach einem der Ansprüche 7 bis 16, dadurch gekennzeichnet, daß die Armfeder (23) durch Drehen des Haltearmes (21) umgewandelt bzw. geändert wird, nachdem ein freies Ende der Armfeder (23) einen Federstopper (25) des Magazingehäuses (1) berührt.

11. Ein Plattenmagazin nach einem der Ansprüche 1 bis 10, dadurch gekennzeichnet, daß der auf der Plattenträgereinrichtung (10) vorgesehene untere Stopperteil zwischen zwei Vorsprünge (26) eingefügt ist, die auf jeder der Unterteilungsplatten (3) vorgesehen sind.

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18. Ein Plattenmagazin nach einem der Ansprüche 10 bis 17, dadurch gekennzeichnet, daß ein oberer Stopperteil auf einer Oberseite des elastischen Stoppers (13) vorgesehen ist.

12. Ein Plattenmagazin nach einem der Ansprüche 1 bis 11, dadurch gekennzeichnet, daß eine Vorderkante einer Standardplatte (4), die von einem Schlitz (90) vorsteht, und eine Vorderkante einer Platte (34) mit kleiner Größe, die von einem Schlitz (90) vorsteht, bei im wesentlichen der gleichen Position angeordnet sind, wenn die Kickhebel (7) durch einen Auswerfbetrieb gedreht sind.

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19. Ein Plattenmagazin nach einem der Ansprüche 10 bis 18, dadurch gekennzeichnet, daß jede der Plattenträgereinrichtungen (10) eine Plattenaufgabe (33) aufweist, die an einer oberen Fläche des freien Endes des elastischen Stoppers (13) vorgesehen ist.

13. Ein Plattenmagazin nach einem der Ansprüche 1 bis 12, dadurch gekennzeichnet, daß eine Vorderkante einer Standardplatte (4), wenn sie in einem Schlitz (90) aufgenommen ist, und eine Vorderkante einer Platte (34) kleiner Größe, wenn sie in dem Schlitz (90) aufgenommen ist, bei im wesentlichen der gleichen Position von der Öffnung (2) aus angeordnet sind.

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20. Ein Plattenmagazin nach einem der Ansprüche 3 bis 19, dadurch gekennzeichnet, daß ein Paar von elastischen Stoppern (13) den Kontaktteil im wesentlichen auf einem Teil einer Bogenausdehnung des stoppenden Teils der Plattenträgereinrichtung (10) angeordnet hat und elastisch auf der Plattenträgereinrichtung (10) vorgesehen ist, und vorsteht, um in einer Aufwärtsrichtung schräg vorzustehen.

14. Ein Plattenmagazin nach einem der Ansprüche 5 bis 13, dadurch gekennzeichnet, daß nur Platten gewünschter Größe bei einer ausgeworfenen Position gehalten werden und Platten anderer Größe zurückgeführt bzw. zurückgefördert werden, wenn die Kickhebel (7) freigegeben bzw. ausgelöst sind.

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21. Ein Plattenmagazin nach einem der Ansprüche 11 bis 20, dadurch gekennzeichnet, daß ein ausgedehnter Teil, der sich zu der Rückseite des Magazingehäuses (1) erstreckt, auf jeder der Unterteilungsplatten (3) vorgesehen ist, und der ausgedehnte Teil angeordnet ist, um wenigstens über ein Vorderende der oberen und/oder unteren Fläche des unteren Stopperteils hinwegzugehen.

15. Ein Plattenmagazin nach einem der Ansprüche 7 bis 14, dadurch gekennzeichnet, daß die Haltearme (21) durch die Armstifte (22) drehbar vorgesehen sind und in eine Richtung gedrückt bzw. gezwängt werden, und die Unterteilungsplatten (3) die freien Enden der Haltearme (21) jeweils stoppen.

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22. Ein Plattenmagazin nach einem der Ansprüche 15 bis 21, dadurch gekennzeichnet, daß ein Abstand zwischen freien Enden beider Haltearme (21) an ihren Haltepositionen kleiner ist als der Durchmesser der Platte (34) vom kleinen Typ.

16. Ein Plattenmagazin nach einem der Ansprüche 7 bis 15, dadurch gekennzeichnet, daß eine Armfeder (23) vorgesehen ist, die einen gebogenen Teil

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23. Ein Plattenmagazin nach einem der Ansprüche 15 bis 22, dadurch gekennzeichnet, daß ein Stopper (25) zum Stoppen des Haltearmes (41) an einem Kantenteil jeder der Unterteilungsplatten (3) als ein aufgeweitetes bzw. verbreitertes Teil an einer Stelle nahe der Öffnung vorgesehen ist und wie ein dreieckiger Teil abgeschnitten ist.

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19

EP 0 355 011 B1

20

24. Ein Plattenmagazin nach Anspruch 20, dadurch gekennzeichnet, daß die Plattenaufgabe (33) als konvexes Teil oder schräge Ebene in einem Aussparungsteil auf der oberen Fläche angebracht ist.

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25. Ein Plattenmagazin nach Anspruch 21, dadurch gekennzeichnet, daß der elastische Stopper (13) einen Gelenk- bzw. Drehteil, der auf seiner Außenseite vorgesehen ist, und eine geneigte Führungsfläche, die auf der Vorderseite des elastischen Stoppers (13) vorgesehen ist, aufweist.

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26. Ein Plattenmagazin nach einem der Ansprüche 11 bis 25, dadurch gekennzeichnet, daß jede der Plattenträgereinrichtungen (10) eine tragende Führungseinrichtung aus einer dünnen Platte (17) zum Tragen und Führen einer Außenkante der Plattenträgereinrichtung (10) und der geneigten Führungsflächenteile (15) der elastischen Stopper (13) auf der Plattenträgereinrichtung (10) aufweist, auf eine Weise, daß sie vertikal verschiebbar ist, wenn die Rückseite der Platte beim Einschieben gedrückt wird.

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27. Ein Plattenmagazin nach einem der Ansprüche 20 bis 26, dadurch gekennzeichnet, daß eine Außenform des elastischen Stoppers (13) eine Bogenlinie aufweist, die einen größeren Radius (R_2) als ein Radius (R_1) der Platte (34) mit kleiner Größe aufweist.

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28. Ein Plattenmagazin nach einem der Ansprüche 20 bis 27, dadurch gekennzeichnet, daß ein Radius einer Vorderkante des elastischen Stoppers (13), die einen Ansatz (14) aufweist, einen kleineren Radius hat als ein Radius der Standardplatte (4).

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29. Ein Plattenmagazin nach einem der Ansprüche 20 bis 28, dadurch gekennzeichnet, daß ein Radius einer Vorderkante des elastischen Stoppers (13), die einen Ansatz (14) aufweist, einen größeren Radius als einen Radius (R_1) der Platte (34) mit kleiner Größe aufweist.

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30. Ein Plattenmagazin nach einem der Ansprüche 20 bis 29, dadurch gekennzeichnet, daß der Mittelpunkt des Bogens der Vorderkante des elastischen Stoppers (13) auf einer Mittellinie liegt, die definiert wird, indem die Mittelpunkte der Standardplatte (4) und der Platte (34) vom kleinen Typ verbunden werden.

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31. Ein Plattenmagazin nach einem der Ansprüche 21 bis 30, dadurch gekennzeichnet, daß eine Bogenform des verlängerten Teils einen Radius hat, der größer ist als ein Radius (21) der Platte (34)

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mit kleiner Größe.

32. Ein Plattenmagazin nach einem der Ansprüche 26 bis 31, dadurch gekennzeichnet, daß ein verlängerter Teil die Unterseite des unteren Stopper-teils und eines geneigten Führungsflächenbereiches abdeckt.

33. Ein Plattenmagazin nach einem der Ansprüche 21 bis 32, dadurch gekennzeichnet, daß der verlängerte Teil aus Stoff besteht, der auf einem Paar von Vorsprüngen (26) befestigt ist, wobei ein dünner Film (44), wie zum Beispiel ein Kunstharzfilm unter dem verlängerten Teil befestigt ist.

34. Ein Plattenmagazin nach Anspruch 33, dadurch gekennzeichnet, daß der dünne Film (44) ein Kunstharzfilm ist und unter und quer zur den zwei Vorsprüngen (26) angeordnet ist und weiterhin sich außerhalb der zwei Vorsprünge (26) erstreckt.

35. Ein Plattenmagazin nach Anspruch 32, dadurch gekennzeichnet, daß der verlängerte Bogenteil obere und untere bogenförmige Scheiben aufweist, die sich jeweils von der oberen Fläche und der Rückfläche der Unterteilungsplatte (3) erstrecken, wobei ein unterer Stopperteil zwischen die oberen und unteren bogenförmigen Scheiben eingefügt ist.

36. Ein Plattenmagazin nach Anspruch 32, dadurch gekennzeichnet, daß die Bereiche der verlängerten Teil größer als ein Durchmesser der Platte (34) von kleiner Größe ist.

Revendications

1. Magasin à disques comprenant :
un boîtier de magasin (1),
une multitude de plaques de séparation (3) qui sont maintenues horizontalement dans le boîtier de magasin (1) pour définir entre celles-ci une multitude de fentes (90) pour contenir une multitude de disques qui doivent être insérés à partir d'une ouverture avant (2) dudit boîtier de magasin (1),
une multitude de moyens d'engagement de disque (10) qui sont maintenus horizontalement et de manière coulissante au côté arrière de ladite multitude de plaques de séparation (3) dans ledit boîtier de magasin (1),
caractérisé en ce que
ladite multitude de moyens d'engagement de disque sont une multitude de moyens portedisque (10) qui sont maintenus sur et au côté arrière de ladite multitude de plaques de sépara-

21

EP 0 355 011 B1

22

- tion (3) dans ledit boîtier de magasin (1),
une multitude de moyens de support de disque (12) sont prévus sur ladite multitude de moyens porte-disque (10) pour supporter des disques de dimension plus petite (34) sur lesdits moyens porte-disque (10), respectivement, et ladite multitude de moyens de support de disque (12) comprend au moins un moyen de contact (13) pour arrêter ledit disque de faible dimension (34) qui doit être inséré avec des parties de butée supérieure (14) pour couvrir et empêcher ledit disque de faible dimension (34) de se déplacer vers le haut et une partie de butée inférieure (11) pour recevoir et empêcher ledit disque de faible dimension (34) de se déplacer vers le bas.
2. Magasin à disques selon la revendication 1, caractérisé en ce que ladite multitude de moyens de support de disque (12) sont prévus sur lesdits moyens porte-disque (10) sur le côté de ladite ouverture avant (2).
3. Magasin à disques selon la revendication 1, caractérisé en ce que chacun desdits moyens porte-disque (10) comporte une plaque mince (17) suivant sa périphérie (10a) et un guide rainuré (5) pour engager ladite plaque mince (17).
4. Magasin à disques selon l'une des revendications 1 à 3, caractérisé en ce que
chacun desdits moyens porte-disque (10) est raccordé par une broche de connexion (20) à une extrémité d'un levier d'actionnement (7) pour faire coulisser ledit moyen porte-disque (10),
les positions de ladite broche de connexion (20) sur ledit levier d'actionnement (7) lorsque le moyen de porte-disque (10) est à une position de stockage et lorsque le moyen porte-disque (10) est à une position d'éjection sont sur une ligne qui est parallèle à la direction d'insertion/éjection des disques.
5. Magasin à disques selon l'une des revendications 1 à 4, caractérisé par un guide rainuré (5) pour supporter les deux côtés de chacun desdits moyens porte-disque (10) et un levier d'actionnement (7) qui supporte pratiquement le côté le plus à l'intérieur dudit moyen porte-disque (10).
6. Magasin à disques selon l'une des revendications 1 à 5, caractérisé par un moyen de pression pour presser chacun desdits moyens porte-disque (10) vers la direction interne.
7. Magasin à disques selon l'une des revendications 1 à 6, caractérisé en ce que
des bras de maintien (21) sont prévus pour chacun pivoter sur une broche de bras (22) prévue près des deux côtés de ladite ouverture (2) et en ce que l'extrémité libre de chaque bras de maintien (21) est disposée à une position plus à l'intérieur que la broche de bras correspondante (22),
des moyens de pression sont disposés pour presser les côtés extérieurs dudit bras de maintien (21), et
un bord d'un disque dans une fente (90) est pressé par ladite extrémité libre desdits bras de maintien (21).
8. Magasin à disques selon l'une des revendications 1 à 7, caractérisé en ce que chacune desdites plaques de séparation (3) comprend un élément en forme de plaque et des entretoises (28) prévues sur ses deux extrémités, lesdites entretoises (28) ayant des pas d'engagement formés et permettant de ce fait un empilage desdites plaques de séparation (3) pour former des fentes (90) entre celles-ci.
9. Magasin à disques selon l'une des revendications 2 à 8, caractérisé en ce que chacun de ladite multitude de moyens de support de disque (12) comprend une butée élastique (13) prévue sur ledit moyen porte-disque (10) inclinée vers le haut pour empêcher que ledit disque de faible dimension (34) soit inséré.
10. Magasin à disques selon l'une des revendications 1 à 9, caractérisé en ce que chacun de ladite multitude de moyens porte-disque (10) comporte une partie de butée formée en forme d'arc et ladite partie de butée inférieure (11) s'étend en forme de gradin à partir du fond de ladite partie de butée.
11. Magasin à disques selon l'une des revendications 1 à 10, caractérisé en ce que ladite partie de butée inférieure prévue sur ledit moyen porte-disque (10) est insérée entre deux saillies (26) prévues sur chacune desdites plaques de séparation (3).
12. Magasin à disques selon l'une des revendications 1 à 11, caractérisé en ce qu'un bord avant d'un disque standard (4) sorti à partir d'une fente (90) et un bord avant d'un disque de faible dimension (34) sorti à partir d'une fente (90) sont disposés pratiquement à la même position lorsque lesdits leviers d'actionnement (7) sont tournés par l'opération d'éjection.
13. Magasin à disques selon l'une des revendications 1 à 12, caractérisé en ce qu'un bord avant d'un disque standard (4) lorsque reçu dans une fente (90) et un bord avant d'un disque de faible

23

EP 0 355 011 B1

24

dimension (34) lorsque reçu dans la fente (90) sont disposés pratiquement à la même position à partir de ladite ouverture (2).

14. Magasin à disques selon l'une des revendications 5 à 13, caractérisé en ce que seuls les disques de taille désirée sont maintenus à la position éjectée et les disques d'une autre taille sont renvoyés lorsque lesdits leviers d'actionnement (7) sont libérés.

15. Magasin à disques selon l'une des revendications 7 à 14, caractérisé en ce que lesdits bras de maintien (21) sont prévus pour pouvoir tourner par lesdites broches de bras (22) et sont poussés dans une direction, lesdites plaques de séparation (3) arrêtent lesdites extrémités libres desdits bras de maintien (21), respectivement.

16. Magasin à disques selon l'une des revendications 7 à 15, caractérisé en ce qu'un ressort de bras (23) est prévu ayant une partie de courbure dépassant vers une face latérale d'un bras de maintien respectif (21), ladite partie de courbure pressant ledit bras de maintien (21) lorsque ledit bras de maintien (21) est tourné en un angle fixe surmontant la force dudit ressort de bras (23).

17. Magasin à disques selon l'une des revendications 7 à 16, caractérisé en ce que ledit ressort de bras (23) est transformé par la rotation dudit bras de maintien (21) après qu'une extrémité libre dudit ressort de bras (23) vienne en contact avec une butée de ressort (25) dudit boîtier de magasin (1).

18. Magasin à disques selon l'une des revendications 10 à 17, caractérisé en ce qu'une partie de butée supérieure est prévue sur une face supérieure de ladite butée élastique (13).

19. Magasin à disques selon l'une des revendications 10 à 18, caractérisé en ce que chacun desdits moyens porte-disque (10) comprend un tampon de disque (33) prévu sur une face supérieure d'une extrémité libre de ladite butée élastique (13).

20. Magasin à disques selon l'une des revendications 3 à 19, caractérisé en ce qu'une paire de butées élastiques a ladite partie de contact disposée pratiquement sur une partie sur un prolongement de l'arc de ladite partie de butée dudit moyen porte-disque (10) et prévue de manière élastique sur ledit moyen porte-disque (10) et dépassant pour être inclinée dans une direction supérieure.

21. Magasin à disques selon l'une des revendications 11 à 20, caractérisé en ce qu'une partie prolongée qui se prolonge vers le côté arrière dudit boîtier de magasin (1) est prévue sur chacune desdites plaques de séparation (3) et ladite partie prolongée est disposée pour recouvrir au moins une extrémité avant de la face supérieure et/ou du dessous de ladite partie de butée inférieure.

22. Magasin à disques selon l'une des revendications 15 à 21, caractérisé en ce que la distance entre les extrémités libres des deux dits bras de maintien (21) à leur position de repos est inférieure au diamètre dudit disque du type à faible dimension (34).

23. Magasin à disques selon l'une des revendications 15 à 22, caractérisé en ce qu'une butée (25) pour arrêter ledit bras de maintien (21) est prévue sur une partie de bord de chacune desdites plaques de séparation (3) comme une partie élargie, à une position proche de la découpe d'ouverture identique à une partie triangulaire.

24. Magasin à disques selon la revendication 20, caractérisé en ce que le tampon de disque (33) est monté comme une partie convexe ou un plan incliné dans une partie d'évidement sur ladite face supérieure.

25. Magasin à disques selon la revendication 21, caractérisé en ce que ladite butée élastique (13) comporte une partie de charnière prévue sur son côté extérieur et une face de guidage inclinée prévue sur le côté avant de ladite butée élastique (13).

26. Magasin à disques selon l'une des revendications 11 à 25, caractérisé en ce que chacun desdits moyen porte-disque (10) comporte un moyen de guide de support constitué d'une plaque mince (17) pour supporter et guider le bord extérieur dudit moyen porte-disque (10) et lesdites parties de face de guidage inclinées (15) de ladite butée élastique (13) sur ledit moyen porte-disque (10) de manière à être verticalement décalable en poussant par le côté arrière du disque lorsqu'inséré.

27. Magasin à disques selon l'une des revendications 20 à 26, caractérisé en ce qu'une forme extérieure de ladite butée élastique (13) présente une ligne en forme d'arc qui présente un rayon plus grand (R_2) que le rayon (R_1) dudit disque de faible dimension (34).

28. Magasin à disques selon l'une des revendications 20 à 27, caractérisé en ce que le rayon d'un

25

EP 0 355 011 B1

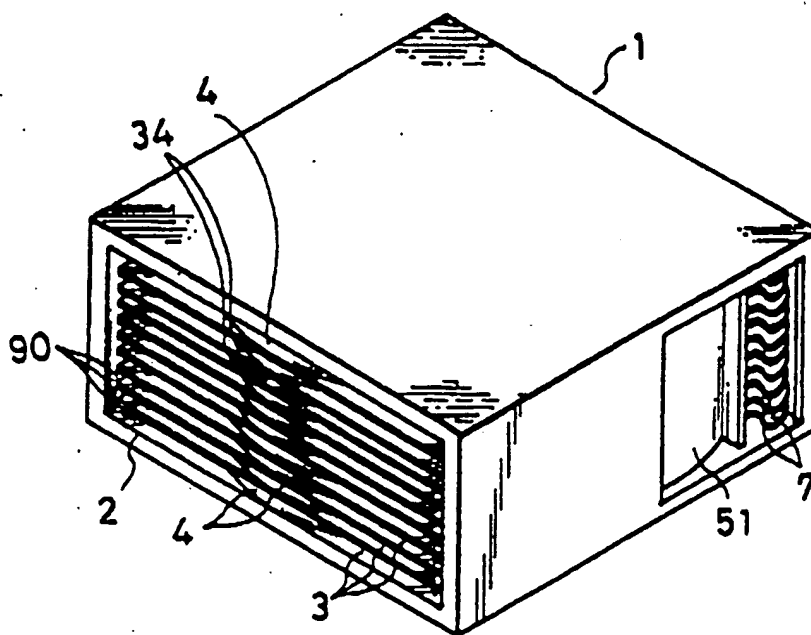
26

bord avant de ladite butée élastique (13) comportant un appendice (14) présente un rayon plus petit que le rayon dudit disque standard (4).

29. Magasin à disques selon l'une des revendications 20 à 28, caractérisé en ce que le rayon d'un bord avant de ladite butée élastique (13) comportant un appendice (14) présente un rayon plus grand que le rayon (R_1) dudit disque de faible dimension (34). 5
10
30. Magasin à disques selon l'une des revendications 20 à 29, caractérisé en ce que le centre de l'arc dudit bord avant de ladite butée élastique (13) est sur une ligne centrale définie par les centres de connexion dudit disque standard (4) et dudit disque du type à faible dimension (34). 15
31. Magasin à disques selon l'une des revendications 21 à 30, caractérisé en ce qu'une forme en arc de ladite partie prolongée présente un rayon qui est plus grand que le rayon (21) dudit disque de faible dimension (34). 20
32. Magasin à disques selon l'une des revendications 26 à 31, caractérisé en ce qu'une partie prolongée recouvre le côté du dessous de ladite partie de butée inférieure et une section de la face de guidage inclinée. 25
30
33. Magasin à disques selon l'une des revendications 21 à 32, caractérisé en ce que ladite partie prolongée est constituée de tissu fixé sur une paire de saillies (26), et en ce qu'un film mince (44) tel qu'un film de résine est fixé sous ladite partie prolongée. 35
34. Magasin à disques selon la revendication 33, caractérisé en ce que ledit film mince (44) est un film de résine et est disposé sous et à travers lesdites deux saillies (26) et se prolonge de plus à l'extérieur des deux saillies (26). 40
35. Magasin à disques selon la revendication 32, caractérisé en ce que la partie en forme d'arc prolongé comporte des feuilles en forme d'arc supérieure et inférieure qui se prolongent à partir de la face supérieure et de la face arrière de ladite plaque de séparation (3), respectivement, dans lequel une partie de butée inférieure est insérée entre lesdites feuilles en forme d'arc supérieure et inférieure. 45
50
36. Magasin à disques selon la revendication 32, caractérisé en ce que la largeur de ladite partie prolongée est plus grand que le diamètre dudit disque de faible dimension (34). 55

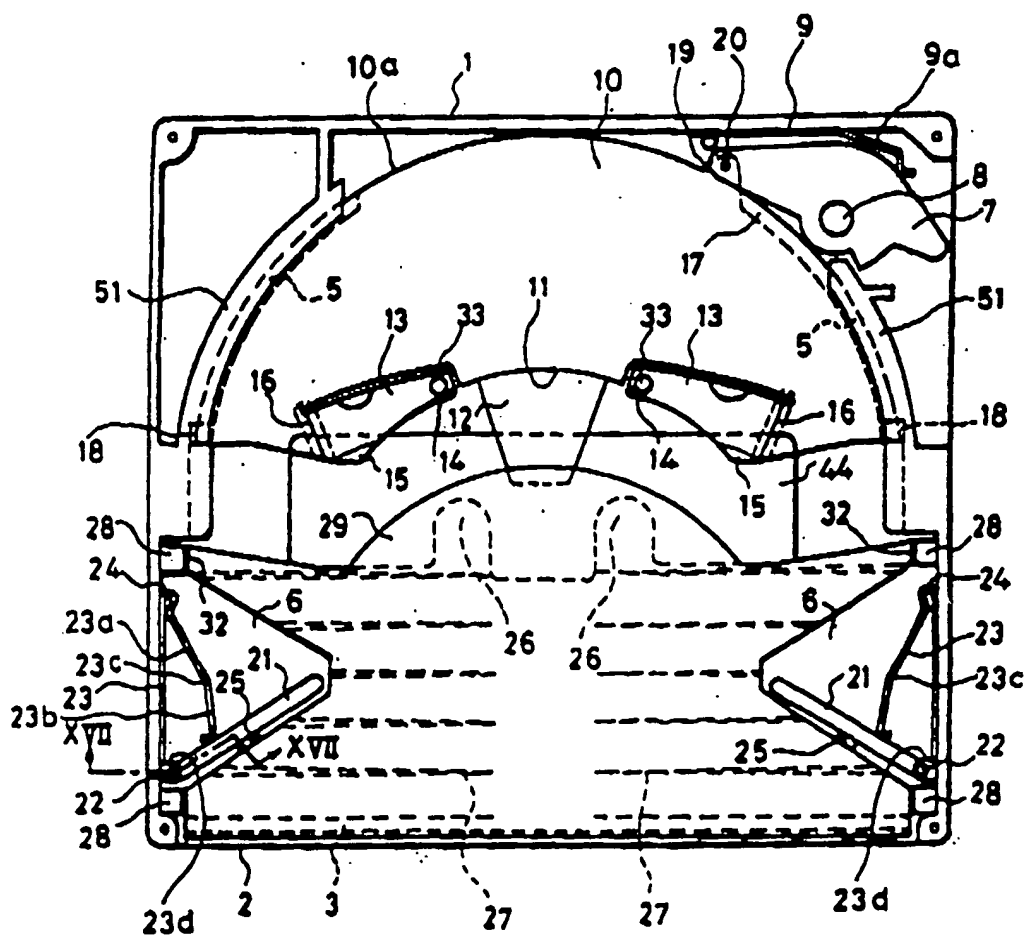
EP 0 355 011 B1

FIG.1



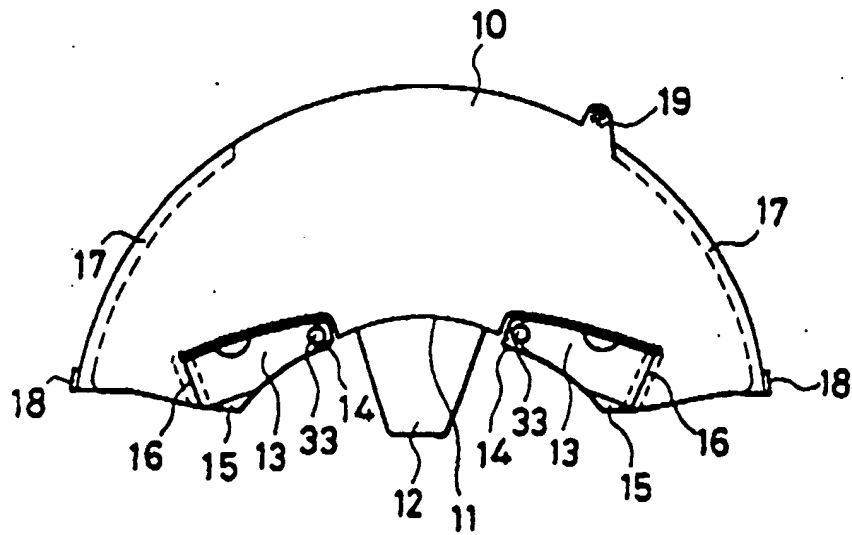
EP 0 355 011 B1

FIG. 2



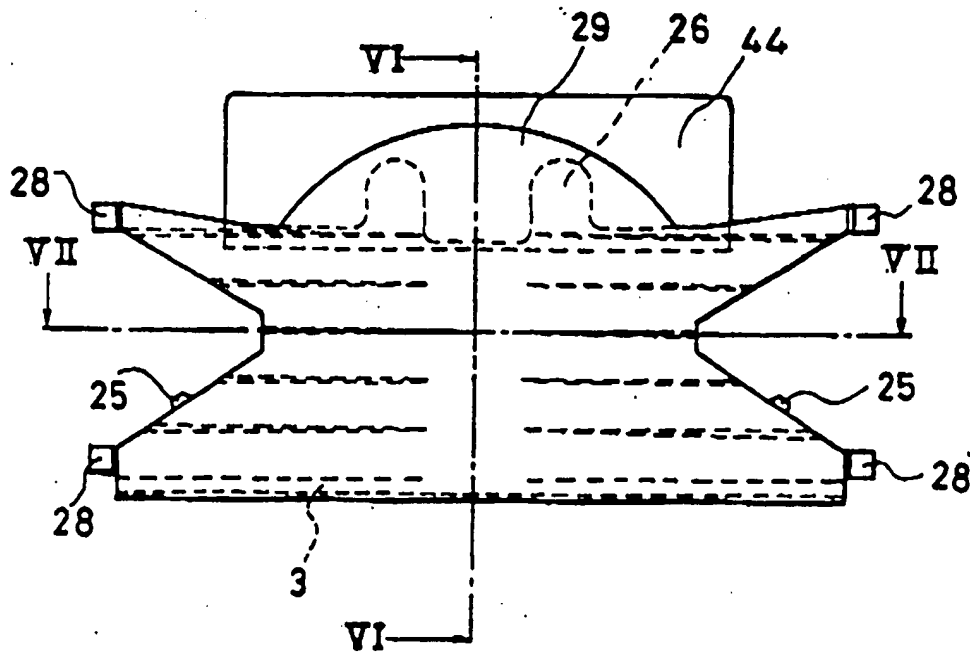
EP 0 355 011 B1

FIG. 3



EP 0 355 011 B1

FIG. 5



EP 0 355 011 B1

FIG.5 (a)

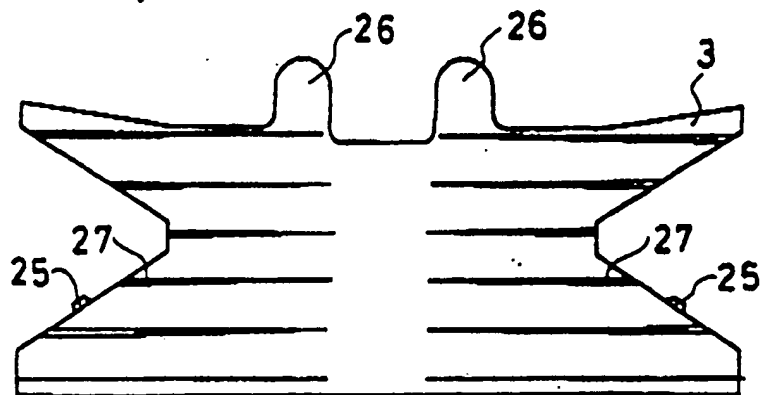


FIG.5 (b)

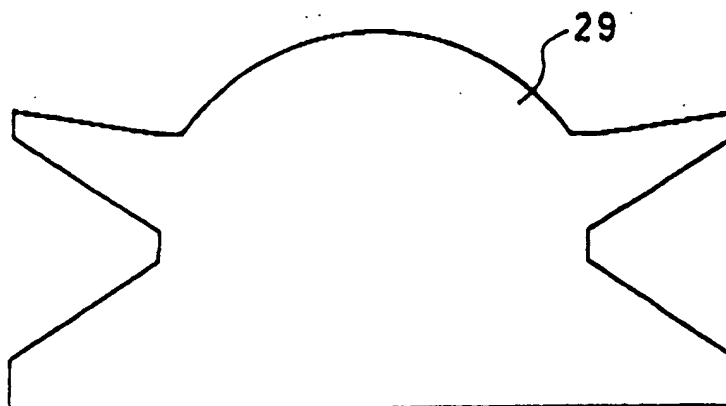
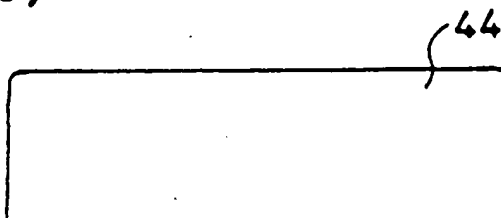


FIG.5 (c)



EP 0 355 011 B1

FIG. 6

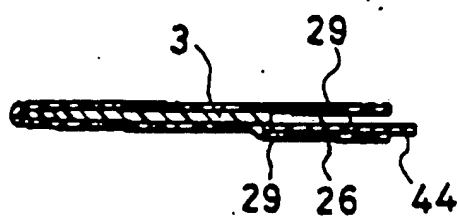
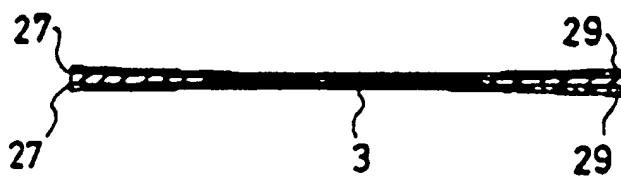
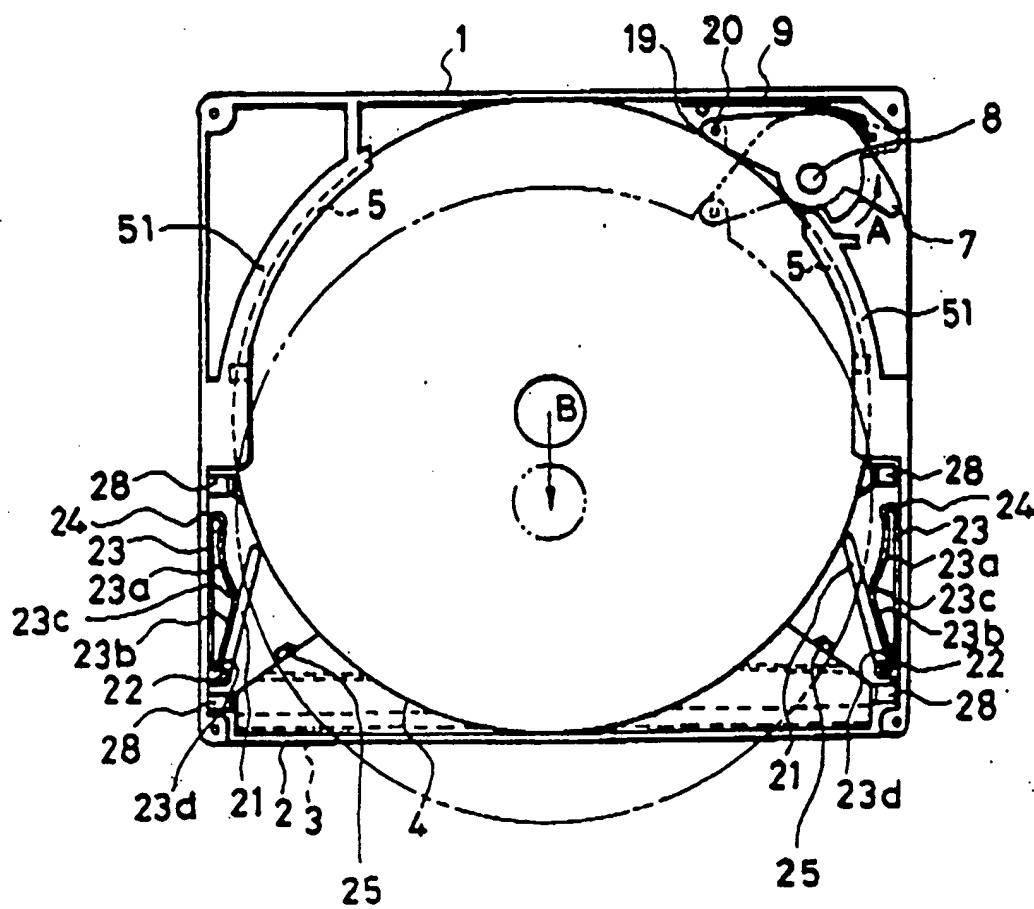


FIG. 7



EP 0 355 011 B1

FIG. 8



EP 0 355 011 B1

FIG. 9

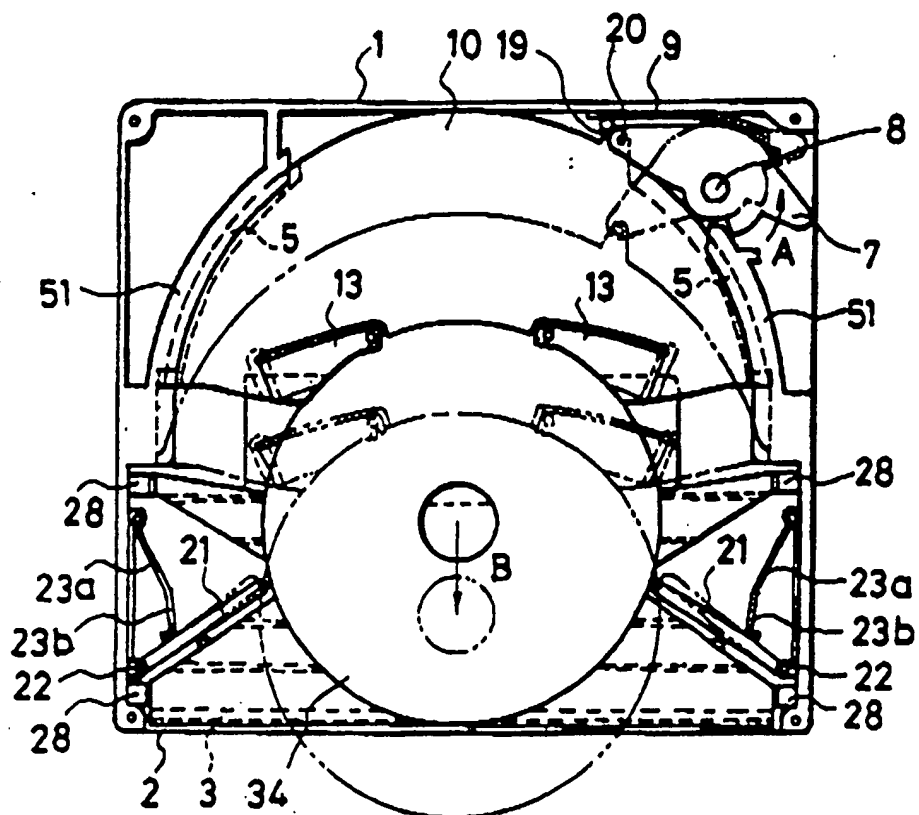
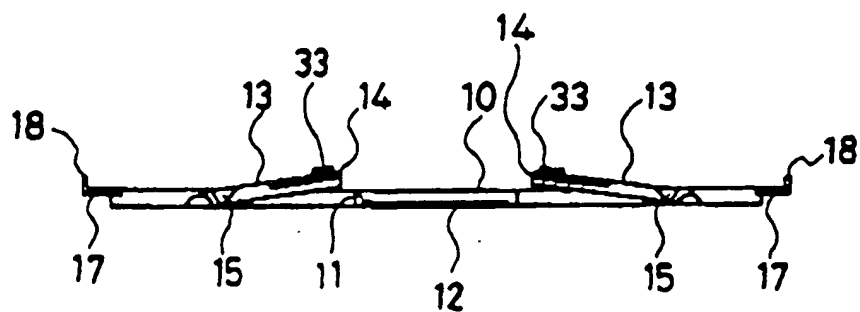


FIG. 10



EP 0 355 011 B1

FIG.11

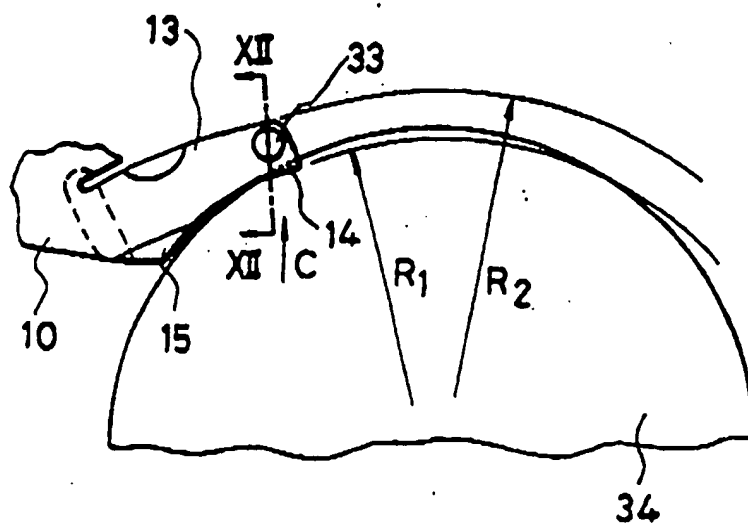


FIG.12

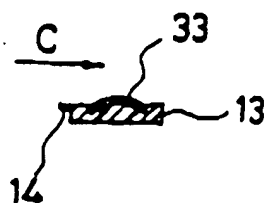
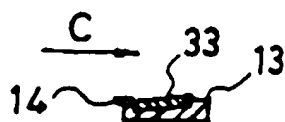


FIG.13



EP 0 355 011 B1

FIG.14

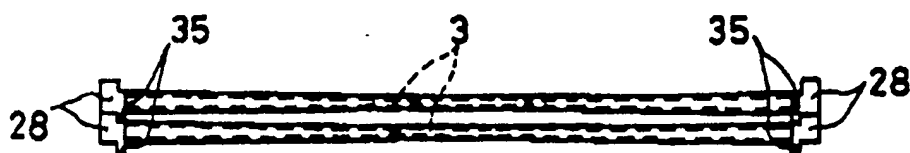
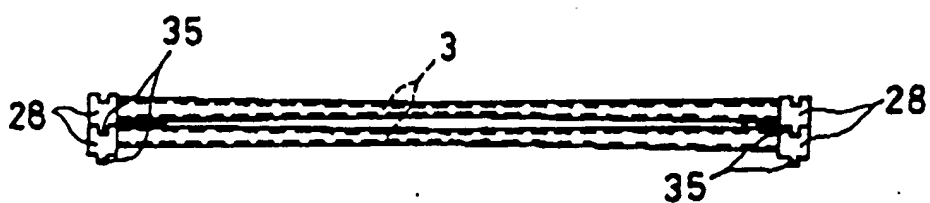


FIG.15



EP 0 355 011 B1

FIG. 16

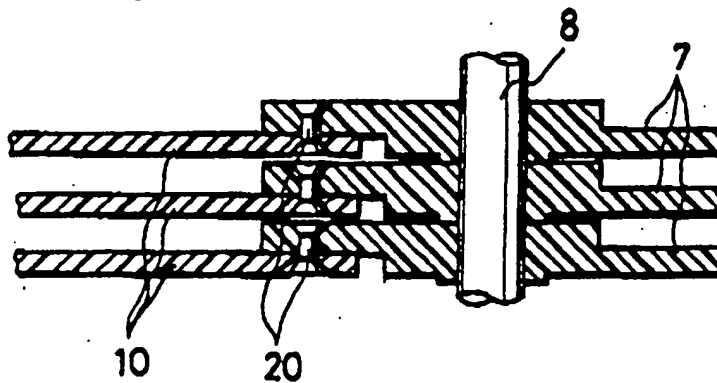
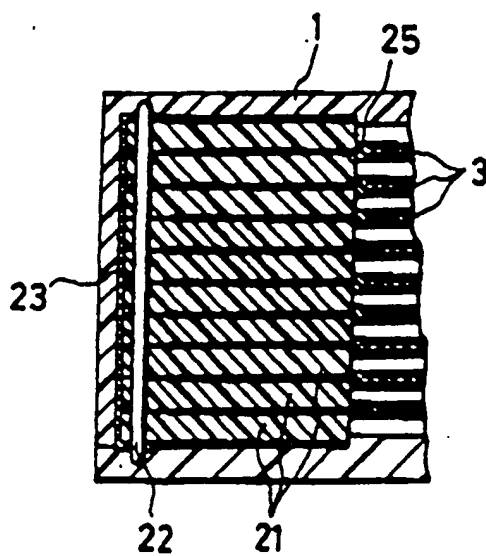


FIG. 17



EP 0 355 011 B1

FIG.18

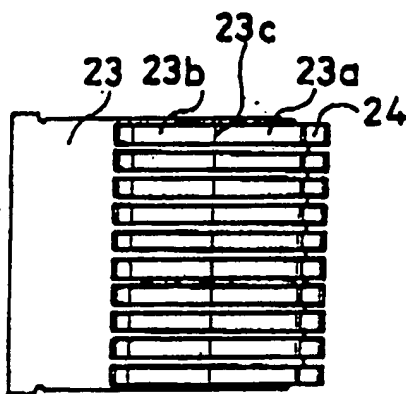


FIG.19

